Bernhard Statzner Interview

Vince Resh: Ok, so we're talking with Bernhard Statzner. He's the first person we're interviewing regarding the river continuum concept paper. Bernard, would you please tell us a little bit about your background, your education, your positions, etcetera.

Bernhard Statzner: I don't tell you all my life, huh?

VR: No no no…

BS: Just…educated in Germany at the University of Kiel. Interrupting that and going to Central Africa, West Africa, then my PhD in '79. Then I had a position in Karlsruhe as an assistant professor, as a professor at another university in Germany. Quit science to be a manager, and then went to France to Lyon to be a research director. That's what I'm still doing.

VR: Where were you when you were still interested in the river continuum? Where you still at Karlsruhe?

BS: I was at Karlsruhe, yeah.

VR: So, give us the first thoughts that you had when you read the river continuum paper.

BS: I read it as all people did when it appeared, and there were previous papers. Cummins in '74 wrote something, so we were aware that something may happen like that. I really carefully read it when I prepared a trip in particular to the United States to a seminar here. I went to the Netherlands, and we really analyzed it word by word to understand what's in it, and what are the consequences of it. And what we observed at that time, that was in '83, that already, in the United States, or North America, this had so much impact on the orientation in stream research that we thought it might be rash to look closely to it and then just see what we could get out of it.

VR (2:01): Do you think that your and Bert Higler's reaction to the river continuum was typical of Europeans compared to Americans? What do you think the difference was?

BS: I wouldn't say I was typical of Europeans, because what we did was we analyzed that in a way that I think nobody had done before. So, that was what we did.

VR: What were some of the ideas that Europeans had about zonation and the river continuum ideas that Americans didn't have? I know you told me a lot about ?Tilman? Could you just summarize some of the ideas that were prevalent in Europe in the late 1970s?

BS: There were several things going on. We had this strong impact of ?????? on the zonation front. And, the stream zonation is described in this continuum pattern. So basically, that was already a difference in the continuum view and the discontinuum view

in Europe. That view was based on taxonomical structure. And when Bert and I prepared these seminars for our trip to the United States, we took this continuum view and tried to analyze that in the context of the things we considered as important, and that was basically a European view. And, we added a second part to that. There was an analysis of the continuum paper, and the second part to the seminar and later also the publication was that we tried to figure out how these discontinua that exist in the taxonomical structure relate to changes in hydraulics, and that on a worldwide scale. So, it was an evaluation of the theoretical background of the river continuum concept plus our ideas about discontinua in taxonomic structure that relate to physical discontinuum.

VR (4:42): Tell us a little bit about how you and Bert got together to do this seminar. The rationale behind what you were going to do.

BS: You want to hear the truth?

VR: Yes.

BS: At that time, I was a kid and Bert was also wasn't very rich and we had a symposium at Kent in 1983, so we wanted to go there, and then our plan was to travel through the United States to visit different labs. To get this paid, we had to apply for funds to prepare the seminar. And then I got the funding, and Bert didn't. So, I came here in Berkeley for a brief moment. I went to Corvallis to give this paper. And I had a great time, travelling through the United States. That was basically the reason to do that. We didn't do it planning to write a paper. But when I gave the seminars here in Berkeley, also in Corvallis, and you can imagine, you go there as a kid and criticize the most important group in stream ecology on a concept they have put forward, that was really a thing. But the response I got after the seminars was, in my view, that was really something which opened up the debate. So then back in Europe, we decided to write the things down. And then we organized it as one paper with the critics…and also the critics were basically theoretical ?ballasts?

VR: Theoretical what?

BS: ?Ballasts? Things that we thought that they are so unrealistic that they are not needed. But there are many things in there that we liked very much about it. And then, the second part was on these hydraulic things and structural areas on a worldwide scale. We put all of this together into one paper. Submitted it to Freshwater Biology, I believe, and the editors cut it into two. They said "We would like to take the second part, on hydraulics," which they took, and the first part we sent in to the Canadian Journal.

VR (7:30): Well, that was a logical place to send it, because that's where the first paper on the continuum was published.

BS: Of course.

VR: What was it like going to Corvallis? I mean, you had two of the authors sitting in the audience. What was the reaction of the audience to what you said?

BS: The reaction was down to Earth, but I had a good time there, and I remember that then people who were there then visited Karlsruhe – Petersen I remember discussing things with, ?Chevelle? ?Ivenbeck?- I stayed on good terms with these people. There was not, at least at that time…we were fighting about things. About ideas. But it was not that we had bad relationships. And maybe the best proof of that was when Cummins went off from Corvallis, people encouraged me to apply for that position, to get me there.

VR: Do you remember the other criticisms, Winterbourn and Rounick, and Sam ?Lakes? which wasn't really a criticism? What do you think the reaction from them to those criticisms were relative to what yours and Higler's was? Do you have any sense, or do you remember? Because certainly Winterbourn and Rounick's was written in a very different way and tone than yours was written.

BS: They criticized…their idea was that there is not this sequence of shredders and things, and afterwards they repeatedly insisted this was the case. I still don't understand why. Nobody does. So, that was a totally different way to criticize that. It was observations and so on. Our way to do it was just to check the logic. Is it possible that this is realistic or not? It was not a thing that was basically derived from observations. So therefore, the approach of these…I don't want to say critics…and our impact to make progress in that field was different.

VR (10:18): What were your main theoretical objections to it? Do you remember just in brief the ones that twenty-five years later stick out in your mind, things you disagree with most?

BS: As far as I remember, there were predictions about the continuum, and the analogy of biological and physical systems which were unrealistic. There were things about diversity patterns, and as far as I have seen, most of what we questioned has then never been tested, so I would say our contribution to the development of the concept was that most people just said "Look this is just too unrealistic to do that." Whereas the path we took, those things we questioned in the '85 paper, I haven't seen that they have really been tested, because I think people understood that it's too unrealistic. It's just not worth to do it.

VR: I think that there have been roughly twenty-five papers that came out of the continuum project, and the second and the third papers, the ones that were senior authored by Minshall ended up doing a lot of the corrections. They had a sliding scale, for example, and I always thought that those improvements, because I think they definitely were improvements, were in response to the criticisms that they got. Did you follow those papers at all?

BS: I read them, yes, but now it's afterwards, and I am no longer concerned with being comprehensive. I don't follow it very closely. But I read the papers.

VR (12:34): If you had read that paper today, do you think you would have objected to it in the same way that you did twenty years ago?

BS: Listen, as I told you before, the reason to do that was that we were so poor that we couldn't afford to come over to the United States, and we had to organize ourselves through other funds. Now I'm so rich, I'm here at your house for Christmas and New Year, and I paid my airfare myself. So I would say reading this paper today, I would just say "Yeah, I don't agree with all of those things," and that's it. I would never write something about it.

VR: Do you think the river continuum has been good for river ecology? Do you think it's advanced management, it's advanced the science? Or do you think it moved us in a direction where people are not questioning things as much as they should?

BS: In the beginning of the 80's, what I observed was that it was cited as if it's not a concept, but as if it is reality. And then, over the time, even the big paper that they made that compared different regions of the stream the…

VR: The ecological monographs?

BS: Yeah. If you look into the most reasonable things, in the concept, which is the changes in functional feeding groups, if you look into the data, especially where they are broken down into seasons, you'll see there are some times it works, some times it doesn't work. And now, if you think about that streams are physically strong enough to get a big stone into such a small piece of sand, why do you need shredders to get leaves into smaller pieces that then collectors can profit off of?

VR (15:00): So, do you think that all in all, it was a positive contribution? That it was even better with the other ideas?

BS: This was complimentary, and it enriched the debate…outside of stream ecology, I wouldn't say it had too much impact on general ecology. But in stream ecology, it certainly had such a big impact. And I think it's good. It was good to do that, it was good to put it together. As far as I learned from the group, it was a rather long process to get it out. And they discussed, and rediscussed, and rediscussed, and with so many people involved, maybe one or the other became tired, I don't know. But, in terms of stream ecology, it was certainly a contribution that was important.

Paul Durst: You said that scientists were relying on this paper as fact in the early 80's, at least to some degree. Do you think that that attitude has changed now? Do you think they use it more as a concept like it was supposed to be?

BS: I still think some say "The river continuum concept says, therefore it is." And I don't rate the pros and cons and evidence we have for it. But many people now understand that for the articles, there are pros and cons. There are contradictions, and

still things we don't understand. For example, I still don't understand the lack of shredders in the upstream areas, I think people are working on the purposes of that, but I still don't think it's understood. Another problem, for example, to test that in Europe, was that in most parts of Europe, we don't have natural stream, so you can't test it there. And if you think about two hundred years ago, there was no forest in Europe. They used it all up to make charcoal, so if you have such a bottleneck, what does this imply for shredders and collectors and so on? There are lots of historical problems linked to the use of the landscape by the people, which is very different in Europe than the United States, for example.

VR (18:16): Let's go off in another direction. How useful do you think the river continuum has been for management of streams and for restoration?

BS: I started studying restoration in '75, and at that time, the most simple and cheapest and most effective measure was to replant riparian trees. You got shade, you got leaves, steadying of banks. But that was before. You had all of these ideas that this was important. It was not formalized in a concept, but we used it to start restoration in the 70's. Then, there was this business with Block and Stanford. That was derived from the river continuum concept, and that described in theory what should happen on the downstream gradient if you put in dams into rivers. I don't know if that changed very much about administration of dams. I don't think so, but…concept-wise, I think that riparian trees, that is the most important impact for restoration .

VR (20:13): Let me ask you a question related to the popularity of the RCC. As you know, it's the most cited paper in stream ecology. What paper to you had the most effect on your career, in terms of ideas? Was it the river continuum concept, or was it a totally different one?

BS: When I studied, which was in the '70s, the amount of literature that was available was maybe 5% of what we have now in the US. So, basically, we were reading everything which was available. And it started at the beginning of the 20th century. And if you read ?Tinamind? an original, then I think that was the author, not one single paper, who had a really big impact on my thinking and my organization. Then, ?Heinz's? book.

VR: The Ecology of Running Waters?

BS: That was really something. Putting together things, the description, it was less conceptual, but it summed up what we knew at that time.

VR (22:26): Getting back to the continuum group. You've met all of them, and some of them know quite well. Do you have any feelings about the roles that different people played, or the roles that somebody who wasn't an author, who of course is now dead, so we can't ask what role he played, he was certainly there from the beginning. Do you have any sense of what the different people did?

BS: As far as I know, I cannot say what every person contributed, but as far as I was told, the basic ideas came from Vannote, who drew a lot on the geomorphology of Leopold from ’64, where these geomorphologists talk a lot about energy dissipation in channels and the equilibrium between energy and channel forms, and I think that was the starting point. But then, I know that Cummins published this freshwater book in ’74, it was years before they put the paper together. I don’t know how much came from Cummins, how much came from Vannote via Leopold, but who ran what or did what, I don’t know.

VR: Well, I want to thank you very much. You are our first interviewee.

BS: You’re very welcome.